



Courses:  
Sustainable Consumption  
Life Cycle Assessment and Environmental Systems Analysis

# Post-graduate School of Industrial Ecology II

9 August - 3 September, 2010, Trondheim

[www.ntnu.no/indecol/psie](http://www.ntnu.no/indecol/psie)



NTNU  
Norwegian University of  
Science and Technology

# Post-graduate School of Industrial Ecology II

Summer School, Trondheim, 9 August - 3 September, 2010

Our summer school offers a series of PhD courses in industrial ecology. The courses in 2010 address sustainable consumption and life-cycle assessment/environmental systems analysis. The school builds on the successfully completed "Postgraduate School of Industrial Ecology", an EU Marie Curie series of research training courses. It leverages NTNU's leading position in industrial ecology, including a comparatively large number of own PhD students and a long focus in PhD education in the field.

The summer school targets Ph.D. candidates, young researchers and faculty members from throughout Europe who want to address sustainable production and consumption in their research. The series teaches participants cutting-edge research methods in Industrial Ecology and related disciplines. It aims to provide skills and knowledge to implement research programs in sustainable production and consumption.

The courses are registered as PhD courses at NTNU and credited and graded according to the European Credit Transfer System (ECTS) with 7,5 ECTS credits each. Each course consists of 2 weeks of self-study and 2 weeks of intensive training sessions in Trondheim. Fulfillment of each course requires the completion of an exam and submission of a research paper.

## Course 1

### Life Cycle Assessment and Environmental Systems Analysis

Trondheim, 9-20 August 2010

**Aim:** To provide the competence to use Life-Cycle Assessment in own research and to know the strength, limitations and potential pitfalls of doing so. It introduces the state-of-the-art and scientific debates connected to both inventory modeling and impact assessment. The core of the course addresses the modeling of product systems and larger production-consumption networks. The course addresses recent advances related to the adaptation of input-output techniques and data for LCA. Allocation issues, attributional and consequential LCA, and the treatment of recycling will be discussed. The impact assessment with impact-category and damage-oriented approaches are reviewed using the new RECIPE method as an example. In addition to the presentation of an up-to-date overview of the LCA methodology, it will be discussed how to use LCA to illuminate critical issues relevant for environmental and technology policy. The planning and interpretation of LCA results will be highlighted using real-world case studies from industry and public policy.

**Required prerequisite knowledge:** The course requires basic knowledge of linear algebra. This is generally documented through an MSc in engineering, applied science or economics. Basic knowledge of LCA at the level of Baumann and Tilman 2004, A Hitch Hiker's Guide to LCA. [www.studentlitteratur.se/31027-01](http://www.studentlitteratur.se/31027-01)

**Research training activities:** Course reading of important papers to be completed before the session. MATLAB training exercises. The discussion of the scientific papers, both written and orally, both formally and informally in small groups, is an important aspect of the research training.

**Course Instructors:** Edgar Hertwich, Richard Wood, Mark Huijbregts

## Course 2

### Sustainable Consumption

Trondheim, 23.Aug.-3. Sept. 2010

**Aim:** This course addresses both the analysis of consumer behaviour and the assessment of environmental impacts of household consumption. On the conceptual side, students learn how social sciences and marketing research address consumer behaviour. The course addresses attempts to influence consumers to behave in a more environmentally responsible way, illuminating the role of motives, knowledge and skills, habits, and external conditions (including infrastructure). Consumers are addressed as active goal-setting and goal-striving individuals, members of smaller and larger collectives, users of technology, and as processors of information. On the assessment side, the course addresses the use of life-cycle assessment and input-output analysis to model the environmental profile of a household. Household budgets are reviewed and the most environmentally important consumer expenditure items are identified. The results of econometric studies of consumer environmental impacts are reviewed. Options for change commonly proposed to and by the households themselves are reviewed for their potentials in lowering environmental impacts. Potentials in the short and long run are identified.

**Assignments, grading and credits:** The main focus of the course is to provide an overview over the full scope of consumption & environment and to provide an understanding of the scientific state-of-the-art in some important areas related to both consumer behavior and household environmental impact assessment. We have therefore selected important papers which are mandatory course reading, most of which needs to be done before the sessions. The grading will be based on an exam and a paper.

**Course Instructors:** Ellen Matthies, Christian Klöckner, Edgar Hertwich

**Application deadline: 7 April 2010**

Online application and further information: <http://www.ntnu.no/indecol/psie>